

Instructional Timeline – Kindergarten Mathematics – 1st Nine Weeks	
Unit 1C: Introducing Patterns	
Suggested Time Frame: ≈ 2 weeks	
Introduction	The Instructional Timeline, as required by RRISD Local Board Policy (EG – Local, 246909), breaks down the content of each nine-week period into smaller, more manageable units of instruction.
Description	Students will use patterns to identify relationships and make predictions. They will use patterns of sounds, physical movement, and concrete objects. They will extend patterns and look for the repeating core of repeating patterns. Students will display math concepts using concrete models in problem solving connected to everyday experiences.
TEKS/SEs taught during this period	<p>K.5 Patterns, relationships, and algebraic thinking. The student identifies, extends, and creates patterns. K.5A Identify, extend, and create patterns of sounds, physical movement, and concrete objects.</p> <p>K.6 Patterns, relationships, and algebraic thinking. The student uses patterns to make predictions. K.6A Use patterns to predict what comes next, including cause-and-effect relationships.</p> <p>Ongoing – Using Math in the Real World</p> <p>K.6 Patterns, relationships, and algebraic thinking. The student uses patterns to make predictions. K.6B Count by ones to 100.</p> <p>K.11 Measurement. The student uses time to describe, compare, and order events and situations. K.11C Read a calendar using days, weeks, and months.</p> <p>K.12 Probability and statistics. The student constructs and uses graphs of real objects or pictures to answer questions. K.12A Construct graphs using real objects or pictures in order to answer questions K.12B Use information from a graph of real objects or pictures in order to answer questions</p> <p>K.13 Underlying processes and mathematical tools. The student applies Kindergarten mathematics to solve problems connected to everyday experiences and activities in and outside of school. K.13A Identify mathematics in everyday situations. K.13B Solve problems with guidance that incorporates the processes of understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness. K.13C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem. K.13D Use tools such as real objects, manipulatives, and technology to solve problems.</p> <p>K.14 Underlying processes and mathematical tools. The student communicates about Kindergarten mathematics using informal language. K.14A Communicate mathematical ideas using objects, words, pictures, numbers and technology. K.14B Relate everyday language to mathematical language and symbols.</p> <p>K.15 Underlying processes and mathematical tools. The student uses logical reasoning.</p>

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	K.15A Justify his or her thinking using objects, words, pictures, numbers, and technology.
Generalizations	<p>The student understands that:</p> <ol style="list-style-type: none"> 1. Patterns exist and occur regularly everywhere. 2. Some patterns repeat. (repeating core) 3. Patterns can be recognized and named with words and symbols. 4. Patterns can be created using tools. 5. Patterns can be extended.
Essential Questions	<ul style="list-style-type: none"> • What is a pattern? • Where can we find patterns? • How can we name or describe a pattern? (not meaning name it as AB, AAB, etc.) • How do we know if a pattern repeats? • How can we use tools to create a pattern? • How can we extend a pattern?
Core Components	<p>Including Statements:</p> <ul style="list-style-type: none"> • Describes simple patterns using informal language • Copies simple patterns using concrete objects • Extends simple patterns using concrete objects and describes how they were extended • Creates patterns using sounds, movements and concrete objects • Predicts what comes next in a linear patterns of shapes or colors • Predicts what comes next in a sequence of events after observing the pattern • Predicts the outcome (effect) of a given situation (cause) • Uses classroom tools every day <p>Teacher Note: The student focus is on the repeating core of a pattern. Activities labeling a pattern as AB, AAB... are not part of the TEKS. The student is assessed on being able to identify the sections where a pattern repeats. Consider having students extend the pattern before and after the repeating core.</p>
Curricular Connections (within, between, and among disciplines)	<p>Patterns Concept Development in the TEKS</p> <p>Related Science TEKS K.3B make predictions based on observable patterns in nature such as the shapes of leaves K.8B identify events that have repeating patterns, including seasons of the year and day and night</p>
Required Lessons	
Recommended Lessons and Learning Experiences	<p>The following resources are continued in K-3D.</p> <p>NCTM Navigations-<i>Navigating Through Problem Solving and Reasoning Grade K</i> (Look in Campus Library or order through i-Bistro District Library Catalog)</p> <ul style="list-style-type: none"> • “Fire Trucks and Hats” pg. 14

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NCTM Navigations-*Navigating Through Number and Operations Grade K-2*
(Look in Campus Library or order through [i-Bistro District Library Catalog](#))

- “Ducks in a Line” pg. 21

NCTM Navigations-*Navigating Through Algebra Grade K-2*

(Look in Campus Library or order through [i-Bistro District Library Catalog](#))

- “Footprints” pg. 16

Mathematics TEKS Toolkit Clarifying Lesson

[Patterns All Around Us](#)

Mathematics TEKS Toolkit Clarifying Activities

[Patterns, Relationships, and Algebraic Thinking](#)

Calculator: Explorations: Uncovering Math with Manipulatives and the TI-10

[Patterns in Counting](#)

NCTM Illuminations

[Calculating Patterns](#)

[Create a Pattern Using an Online Applet](#)

Exemplars

[“Apples and Bananas”, Vol. 10 #1 Math 2002](#)

[“A New Necklace,” Vol. 7 Fall 1999](#)

Engaged Learning Options:

- Place your repeating core in the center of the pocket chart and have students extend the pattern both before and after the repeating core.
- Have students create patterns of movement. (example: snap, stomp, stomp)
- Transfer a visual pattern into a sound pattern. (Example: red, blue, red, blue could be “oink, moo, oink, moo”)
- Go on a pattern hunt. Give students a folded paper booklet and have them record patterns they see throughout the week.
- Challenge students to wear patterns to school during the unit.

Investigations

Unit 3: What Comes Next? Patterns and Functions

DISCUSSION: Can You Do What I Do?, p. 36

DISCUSSION: Two Cube Trains, p. 41

ACTIVITY: Making Cube Trains, p. 42

ACTIVITY: Introducing Making Patterns, p. 59

MATH WORKSHOP: Patterns with Pattern Blocks, Counters, and Cubes, p. 60

ACTIVITY: Introducing Recording Cube Train Patterns, p. 71

MATH WORKSHOP: Constructing and Recording Patterns, p. 72

ACTIVITY: Introducing Pattern Block Snakes, pp. 77 and 78

ACTIVITY: Introducing *Break the Train* (game), pp. 115 and 116

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	<p>enVisionMATH Topic 11 Lesson 1 – p. 195 A Lesson 2 – p. 197A Lesson 5 – p. 203A Lesson 7 – p. 207A Lesson 9 – p. 211A Note to Teacher: On Part 2 of each lesson (Interactive Learning) students should spend a minimal portion of class time on the “Engage” section. Most class time should be spent with students working on the “Extend” activities. Even on lessons that are not listed above, please examine the differentiated instruction section for more hands-on activities. These activities are ideal for small-group or guided instruction.</p>
Differentiation	<p><u>English Language Proficiency Standards Student Expectations with Sentence Stems and Activities to support implementation of the Standards</u> (Note: when you open the link, it may ask you for a certificate or if it is OK to open the file, click OK each time you see the screens.)</p> <p>Use Math TEKS Connections strategies from “<u>MTC Rapid Assessments Interpretations</u>” pages 969 and 972 to differentiate for more and less depth and complexity</p> <p>Less Depth and Complexity:</p> <ul style="list-style-type: none"> ▪ MTC strategies from “<u>Rapid Assessments</u>” pgs. 967 and 971 ▪ If a student points to each element in pattern and “reads” the color, s/he may not understand the pattern has a repeating core – challenge student to analyze patterns to discover the hidden core – predict the hidden element ▪ extra time to complete tasks ▪ small group time provided (pre-teach) ▪ signal (EX: thumbs up/down) to share ideas or answers and to check for understanding ▪ select answer from given choices ▪ use pictures and hands on materials to explain vocabulary <p>More Depth and Complexity:</p> <ul style="list-style-type: none"> ▪ MTC strategies from “<u>Rapid Assessments</u>” pgs. 967 and 971 ▪ challenge the student to find the hidden core in more complex patterns by looking at elements before and after; teacher or peer models reasonable explanations for what could come next ▪ create own problems beyond grade level expectations ▪ students use multiple strategies and explanations ▪ small group (extension)
Instructional Resources	<p><i>Teaching Student Centered Mathematics K-3</i> by Van de Walle and Lovin Chapter 10: Algebraic Thinking</p> <p>Literature Connections (Look in Campus Library or order through <u>i-Bistro District Library Catalog</u>)</p> <ul style="list-style-type: none"> ▪ <i>Math Start</i> by Stuart Murphy: <i>Bug Dance</i> (Positional words) <i>Beep, Beep, Vroom, Vroom</i> (Patterns) <i>A Pair of Socks</i> (patterns)

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	<p>National Library of Virtual Manipulatives Patterning K-2 Completing the Pattern Patterning with Pattern Blocks</p> <p>Round Rock ISD Elementary Mathematics Webpage</p>
Assessment Resources	<p>Rapid Assessments</p> <ul style="list-style-type: none"> • K.5A (missing piece of pattern) • K.6A (what comes next in pattern) • Continue assessing K.6B (counting to 100); K.11C (read calendar) <p>Acces4 Database – Consult campus Instructional Technology Specialist for assistance with accessing Acces4 database.</p>